



CERTIFICATE NUMBER	21-2092809-PDA
EFFECTIVE DATE	28-Apr-2021
EXPIRY DATE	27-Apr-2026
ABS TECHNICAL OFFICE	London Engineering Department

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

DANFOSS A/S

located at

**NORDBORGVEJ 81 - BUILDING E14 S4A, APPROVALS DEPT.,
NORDBORG, Denmark, DK-6430**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Pressure Transmitter
Model: MBS 5100, MBS 5150 & MBS 5153
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 27/Apr/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Steve A.A.P Brincat,Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

DANFOSS A/S

NORDBORGVEJ 81 - BUILDING E14 S4A

APPROVALS DEPT.

NORDBORG

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Tier: 2 - PDA Issued

Product: Pressure Transmitter
Model: MBS 5100, MBS 5150 & MBS 5153
Endorsements:

Intended Service:

For use on ABS classed vessels and offshore facilities in accordance with the listed ABS Rules and International Standards

Description:

MBS 5150 & MBS 5153 with integrated pulse-snobber is suitable in marine applications with severe medium influences like cavitation, liquid hammer or pressure peaks and offers a reliable pressure measurement, even under harsh environmental conditions. The flexible pressure transmitter program covers a 4 – 20 mA output signal, absolute or gauge (relative) versions, measuring ranges from 0 – 4 to 0 – 400 bar.

MBS 5100 pressure transmitter is standard version without puls-snobber designed for use in almost all marine applications, and offers a reliable pressure measurement, even under harsh environmental conditions. The flexible pressure transmitter program covers a 4-20mA output signal, absolute or gauge (relative) versions, measuring ranges from 0 – 4 to 0 – 400 bar.

Rating:

Pressure Range: Pressure ranges in relative (gauge) or absolute from 4 up to 400 bar;

Power Supply: 9-32 V DC.;

Output Signal: 4-20 mA;

Enclosure (IP protection fulfilled together with mating connector): IP 65;

Shock Resistance: 500 g/1 ms;

Ambient temperature range/ Sensor operating temperature(normal): -40 degrees C to 85 degrees C;

Vibration Stability: 20 g, 25 Hz – 2 kHz Sinusoidal; 7.5 grms , 5 Hz – 1 kHz Random;

Overload pressure (static): 6 × FS (max. 1500 bar)

Burst Pressure: 6 × FS (max. 2000 bar)

Service Restriction:

Unit Certification is not required for this product.

If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

The Manufacturer has provided a declaration about the control of, the lack of Asbestos in this product.

Notes/Drawing/Documentation:

Drawing No. Old design versus new design, Old design versus new design, Revision: -, Pages: 1

Drawing No. 060N9000 ver02, Pressure Transmitter, Revision: 02, Pages: 01

Drawing No. 060N9000 Ver01, Pressure Transmitter, Revision: 01, Pages: 01

Drawing No. 120-30437 E10 Marine High Voltage test of 060X0271, Test Report, Test Lab: FORCE Technology, Location: Nordborg, Date:18 November 2020, Revision: -, Pages: 9

Drawing No. 120-30437-1 Damp Heat test of 060X0271, Test Report, Test Lab: FORCE Technology, Location: Nordborg, Date:2 November 2020 - 4 November 2020,Revision: -, Pages: 11

Drawing No. E201507E2, Test Report, Test Lab: Phonenix test lab, Location: Germany, Date:10.11.2020, Revision:1, Pages: 37

Drawing No. E201507E2-2nd version, Test Report, Test Lab: Phonenix test lab, Location: Germany, Date:10.11.2020, Revision:2, Pages: 37

Drawing No. 120-30437-1 Marine Dry Heat and Cold test of 060X0271, Test Report, Test Lab: FORCE Technology,

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Location: Nordborg, Date:28 October 2020 - 30 October 2020, Revision: -, Pages: 12.

Drawing No.120-30437 E10 Marine Vibration of 060X0271, Test Report, Test Lab: FORCE Technology, Location:

Nordborg, Date:10 November 2020 - 13 November 2020, Pages: 15

Drawing No. 060R3046, Approval drawing MBS 5100, Revision: -, Pages: 1

Drawing No. MBS 51XX - Difference between various models MBS5100-MBS5150-MBS5153, Revision: -, Pages: 1

Drawing No. AI369160646499en-000101, Data Sheet - Pressure Transmitter for marine applications Type MBS 5100 and MBS 5150, Revision: -, Date:2021.02, Pages: 5

Drawing No. ESH060N1279, Engineering Sheet - Pressure and Temperature controls, Revision: 00, Date:2021.01.26, Pages: 1

Drawing No. MBS 51XX Product Description, MBS 51XX Product Description, Revision: 00, Date:-, Pages: 1

Terms of Validity:

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STANDARDS

ABS Rules:

- Marine Vessels Rules (2021): 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-1-1/3.3, 4-8-3/1.7, 4-8-3/1.11, 4-8-3/1.17.1, 4-9-9/13.1,4-9-9/15.7 Table 1;

- Facilities on Offshore Installations (2021):1-1-4/9.7, 1-1-A2, 1-1-A3;

- Mobile Offshore Units Rules (2021): 1-1-4/9.7, 1-1-A2, 1-1-A3, 4-3-1/11, 4-3-1/15, 4-3-1/17.1, 6-1-1/9, 6-1-1/13;

- Steel Vessels for Service on Rivers and Intracoastal Waterways Rules (2021): 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-1-1/21, 4-5-1/13;

- High-Speed Crafts Rules (2021): 1-1-4/11.9, 1-1-A2, 1-1-A3, 4-1-1/37, 4-6-1/11, 4-7-9/15.5 Table 9;

- Steel Barges (2021): 1-1-4/7.7, 1-1-A3 & 1-1-A4, 4-1-3/5.7;

National:

NA

International:

IACS UR E10 Rev7:(2018)

Government:

NA

EUMED:

NA

OTHERS:

NA